IN THE CLAIMS

This listing of claims replaces all prior listings:

1. (withdrawn) A Solid-state imaging device comprising:

a plurality of pixels each including a light-receiving portion, a wiring layer including a plurality of wirings and a plurality of lenses formed above said light-receiving portions, wherein at least one of said plurality of lenses is an intra-layer lens including a first layer with a concave portion formed by etching and a second layer formed to bury said concave portion.

2. (withdrawn) A solid-state imaging device according to claim 1, wherein said wiring layer includes at least a first wiring and a second wiring formed on both sides of said light-receiving portion; said first wiring and second wiring are differently positioned with respect to the distance from said light-receiving portion; and said intra-layer lens is positioned between said first wiring and said second wiring.

3. (withdrawn) A solid-state imaging device according to claim 2, wherein said first wiring and said second wiring are integrally formed and are connected to a predetermined voltage source.

4. (withdrawn) A solid-state imaging device according to claim 1, wherein each of said pixels includes a charge readout transistor and a planarizing film which covers a gate electrode of said charge readout transistor to be planarized, and said plurality of wirings are formed above said planarizing film.

5. (withdrawn) A solid-state imaging device according to claim 1, wherein said first layer is an insulation layer formed to directly cover said plurality of wirings to constitute said wiring layer.

6. (withdrawn) A solid-state imaging device according to claim 1, wherein said first layer is an insulation layer formed on said wiring layer.

7. (withdrawn) A solid-state imaging device according to claim 1, wherein in a pixel farther away from the center of an imaging region, the center of said intra-layer lens is formed,

being biased from above the center of said light-receiving portion to the center side of said imaging portion.

8. (withdrawn) A solid-state imaging device according to claim 1, wherein at least one of said plurality of lenses is an on-chip lens formed above said intra-layer lens.

9. (withdrawn) A solid-state imaging device comprising:

a plurality of pixels each including a light-receiving portion, a wiring layer including a plurality of wirings and a plurality of lenses formed above said light-receiving portion, wherein at least one of said plurality of lenses is an intra-layer lens including a first layer with a concave portion formed by etching and a second layer formed to cover said convex portion.

10. (withdrawn) A solid-state imaging device according to claim 9, wherein said wiring layer includes at least a first wiring and a second wiring formed on both sides of said light-receiving portion; said first wiring and said second wiring are differently positioned with respect to the distance from said light-receiving portion; and said intra-layer lens is positioned between said first wiring and said second wiring.

11. (withdrawn) A solid-state imaging device according to claim 9, further comprising a third layer formed between said first and said second layers to cover said convex portion.

12. (currently amended) A method for manufacturing a solid-state imaging device comprising the steps of:

forming a plurality of light-receiving portions on the surface of a substrate;

~~forming wirings on both sides of each of said light-receiving portions;~~

forming a first uppermost wiring on a first side of a light-receiving portion;

forming a second uppermost wiring on a second side of the light-receiving portion opposite the first side, the first uppermost wiring not being directly coupled to the second uppermost wiring;

forming a first insulation layer having a first refractive index;

etching said first insulation layer by using an etching mask and forming a concave portion above each of said light-receiving portions; and

forming a second insulation layer with a second refractive index to bury said concave

portion,

wherein the first and second uppermost wirings ~~part of uppermost layer wirings positioned on both sides of at least one of said light-receiving portions~~ are asymmetrically disposed with respect to said at least one light-receiving portion, and

wherein said etched first insulation layer and said second insulation layer comprise an intra-layer lens, which is formed without being affected by said asymmetrical wirings.

13. (original) A method for manufacturing a solid-state imaging device according to claim 12, further comprising the steps of: prior to the step of forming said wirings,

forming a charge readout transistor; forming a gate electrode to operate said charge readout transistor; and forming a planarizing film which covers said gate electrode to be planarized, wherein said wirings and said concave portions are formed above said planarizing film.

14. (currently amended) A method for manufacturing a solid-state imaging device comprising the steps of:

forming a plurality of light-receiving portions on the surface of a substrate;

~~forming wirings on both sides of each of said light-receiving portions;~~

forming a first uppermost wiring on a first side of a light-receiving portion;

forming a second uppermost wiring on a second side of the light-receiving portion opposite the first side, the first uppermost wiring not being directly coupled to the second uppermost wiring;

forming a first insulation layer with a first refractive index;

forming a reflow film with a convex surface at a position corresponding to the position of said light-receiving portions above said first insulation layer;

etching back said first insulation layer with said reflow film and transferring said convex surface onto said first insulation layer; and

forming a second insulation layer with a second refractive index on said first insulation layer,

wherein the first and second uppermost wirings ~~part of uppermost layer wirings positioned on both sides of at least one of said light-receiving portions~~ are asymmetrically disposed with respect to said at least one light-receiving portion, and

wherein said etched first insulation layer and said second insulation layer comprise an

intra-layer lens, which is formed without being affected by said asymmetrical wirings.

15. (original) A method for manufacturing a solid-state imaging device according to claim 14 further comprising the step of: forming a third insulation layer to cover said convex surface of said first insulation layer prior to the step of forming said second insulation layer.

16. (currently amended) A solid-state imaging device comprising:

a plurality of pixels arranged each including a light-receiving portion and a MOS transistor, wherein a single intra-layer lens is formed corresponding to each of said light-receiving portions,

wherein a first uppermost wiring portion is positioned at a first side of said light-receiving portion and a second uppermost wiring portion is positioned at an opposite side of said light-receiving portion, the first and second uppermost wiring portions being ~~part of uppermost layer wirings positioned on both sides of said light-receiving portion are~~ asymmetrically disposed with respect to said light-receiving portion, and

wherein said intra-layer lens is formed without being affected by said asymmetrical wirings.

17. (canceled).

18. (previously presented) A solid-state imaging device according to claim 16, wherein the center of said intra-layer lens is biased to the center side of an imaging region from the center of said light-receiving portion, when approaching the periphery of the imaging region.

19. (canceled).

20. (previously presented) A solid-state imaging device according to claim 16, wherein said uppermost layer wirings are formed of metallic materials including Al.

21. (currently amended) A method for manufacturing a solid-state imaging device comprising the steps of:

~~forming wirings on a semi-conductor region in which a plurality of pixels each including a light-receiving portion and a MOS transistor are arranged through an insulation layer with the~~

~~light-receiving portion in between;~~

forming a first uppermost wiring on a first side of a light-receiving portion;

forming a second uppermost wiring on a second side of the light-receiving portion opposite the first side, the first uppermost wiring not being directly coupled to the second uppermost wiring, the first uppermost wiring and the second uppermost wiring being formed on a semi-conductor region in which a plurality of pixels each including a light-receiving portion and a MOS transistor are arranged through an insulation layer with the light-receiving portion in between;

forming a first insulation layer with a first refractive index across the whole surface thereof;

selectively removing said first insulation layer with an ~~a~~ etching mask by isotropic-etching at a portion corresponding to said light-receiving portion to form a concave portion corresponding to each light-receiving portion;

forming a second insulation layer with a second refractive index across the whole surface including said concave portion; and

planarizing said second insulation layer and making the second insulation layer remain within said concave portion to form a single intra-layer lens comprising said first and second insulation layers,

wherein a first uppermost wiring portion is positioned at a first side of said at least one light-receiving portion and a second uppermost wiring portion is positioned at an opposite side of said at least one light-receiving portion, the first and second uppermost wiring portions being ~~part of uppermost layer wirings positioned on both sides of at least one of said light-receiving portion are~~ asymmetrically disposed with respect to said at least one light-receiving portion, the first uppermost wiring portion not being directly coupled to the second uppermost wiring portion, and

wherein said intra-layer lens is formed without being affected by said asymmetrical wirings.

22. (currently amended) A method for manufacturing a solid-state imaging device comprising the steps of:

forming wirings on a semi-conductor region in which a plurality of pixels each including a light-receiving portion and a MOS transistor are arranged through an insulation layer with the light-receiving portion in between;

forming a first insulation layer with a first refractive index across the whole surface

thereof;

forming a reflow film with a convexly curved surface at a position corresponding to the respective light-receiving portions on said first insulation layer;

etching back said first insulation layer with said reflow film to transfer said convexly curved surface onto said first insulation layer; and

forming a planarizing film with a second refractive index on said first insulation layer to form a single intra-layer lens including said first insulation layer and said planarizing film,

wherein the first and second uppermost wirings ~~part of uppermost layer wirings positioned on both sides of at least one of said light-receiving portions~~ are asymmetrically disposed with respect to said at least one light-receiving portion, and

wherein said intra-layer lens is formed without being affected by said asymmetrical wirings.